

ECONOMIC HISTORY

West Virginia Glass Houses

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Natural gas,
sand, and river
transportation drew
glass makers to
West Virginia in the
19th century until
those advantages
dwindled

A woman marks a design on a glass for the cutter at Seneca Glass Co., opened in 1896 and closed in 1983 in Morgantown, W.Va. Seneca leaded crystal was favored by Eleanor Roosevelt and President Lyndon Johnson, among others.



The gatherer hoists a gob of hot glass at the end of an iron rod, a “punty” or “pontil” in trade lingo. A shop mate clips it off so that it drops into a water-soaked mold for another craftsman to hand spin until the mixture coats the inside. The bowl, now cooled slightly, is emptied onto a tray to await the oven that will reheat and evenly cool the ware to eliminate stress cracks.

It’s a frigid March day inside the shop at Blenko Glass, located on the Mud River near Huntington, W.Va. The company shut down in late January after a dispute when its former gas supplier emptied its bank account. The amount remains contested. But, for now, the shop is back in business. Blenko glass has retained its reputation for color (using more than 500 proprietary chemical concoctions) and distinctive shapes, and is one of just a few handmade glass factories still operating. Blenko sells a variety of ware, including architectural brick and stained glass to just about every stained-glass maker in the United States. There is Blenko glass in countless collections, churches, and sculptures, including pieces in the National Cathedral in Washington, D.C., and the glass brick at Fenway Park.

While Blenko shop artisans rely on the company’s century old formula for success, the world of sheet glass, tableware, and container glass production has largely vanished from West Virginia. Glass manufacturing offered an alternative to natural

resource extraction, but didn’t pan out the way some of the early 20th century boosters had hoped. Comparative advantages of cheap natural gas, sand, and river transportation eroded over the latter half of the 20th century in the face of falling demand and growing competition in a paper and plastic, free-trade world. Gas can be piped anywhere these days, but its growing cost is hurting the glass industry.

Growing Glass

The glass industry in the United States began in Jamestown, Va., at the time of the founding of the first English settlement, but did not thrive, even though craftsmen immigrated from Poland and Germany and helped develop the industry. The most successful glass houses grew up in New Jersey, New York, and the New England states. In those days, wood fueled the ovens that melted the raw materials.

By 1820, glass houses started to specialize and hire blowers for window glass and tableware. (To make sheet glass at that time, blowers formed cylinders that were then sliced and flattened. Irving Colburn mechanized the flat glass process in the United States around 1910.)

The industry expanded as factories grew, and tasks were divided, with the more routine jobs performed by the less skilled. A gatherer, blower, finisher, and, when press molds were invented in Pennsylvania in 1827, a presser, represented the chief glass jobs. Today, at Blenko, where the glass is still made by hand, this shop system of production remains intact, and some workers have logged more than 40 years in the shop. Often, they

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follow the footsteps of fathers or uncles. The most skilled jobs are finishing and blowing.

"We've never hired glass workers as such. We've always trained our own people," says the founder's grandson, Bill Blenko Jr. "They know that no one will be promoted over them."

By 1880, about 57 percent of U.S. glass house output came from Midwestern states such as Ohio as well as western Pennsylvania, especially around Pittsburgh. While there are reports of West Virginia glass works at Wellsburg and Wheeling as early as 1815 and 1831, respectively, it wasn't until the final decade of the century that industry numbers grew substantially.

The Mountain State share of the national glass industry labor grew from 3 percent in 1890 to 12 percent in 1915 and 15.3 percent by the onset of the Great Depression, according to Kenneth Fones-Wolf, a West Virginia University historian who wrote *Glass Towns*. Beginning in 1890 "West Virginia glass plants and the capital invested in them would expand by a factor of five and its numbers of glass workers would triple."

Between 1890 and 1920, mechanical improvements, especially the bottle-making machine, changed glass production so that "large-scale production became typical rather than exceptional, and the manufacture of glass products could no longer be considered 'backward' as compared with other industries," wrote another economic historian, Warren Scoville, then of the Massachusetts Institute of Technology.

Gas for Glass

William John Blenko's West Virginia shop was his second U.S. endeavor, and he arrived at the tail end of an industry restructuring driven by Friedrich Siemens' changes in furnace technology in the 1860s and 1870s. The continuous tank furnace promoted efficiency — around-the-clock production using plentiful and cheap natural gas.

Blenko in 1893 had established one of the first natural-gas fired stained-glass factories in the United States, in Kokomo, Ind. Born and trained in London, he aimed to sell his product to domestic glass artists. However, they weren't interested. These studios, headed by European artisans, insisted on European-made glass. Discouraged, Blenko headed back to London to export the same product he had crafted in Indiana, but later returned when he was in his 60s to start a glass house in West Virginia in 1921.

The West Virginia glass business benefited from the industry migration that followed the opening of the Midwestern gas fields around 1880. "Entrepreneurs had to weigh the advantages of being close to their materials against the savings which they could effect by locating near their own customers; and in the majority of cases they decided to construct their works near important sources of fuel," wrote Scoville in 1944.

For example, Edward Drummond Libbey moved to Ohio from East Cambridge, Mass., partly because of labor problems but also because of the cost of transporting coal, which

by 1832 powered the New England glass works. He migrated in 1888 with 115 skilled workmen, according to Walter Lezius in another academic paper written in 1937. Michael Owens, a glass blower originally from Wheeling, W.Va., went to work for Libbey, an ironic twist because Owens had participated in the labor demonstrations at Libbey's Massachusetts plant. In an illustration of the glass industry's often-cozy relationship between management and labor, Libbey and Owens became partners. They developed a research and development business, Toledo Glass, to improve manufacturing processes, and they did. Owens invented the automatic bottle-blowing machine in 1903. By 1920, there were about 200 automatic Owens Libbey Suction Blow machines in the United States.

In 1917, the Libbey-Owens-Ford sheet glass plant opened in S. Charleston, W.Va., and cranked out sheet glass for 60 years. That plant and the Pittsburgh Plate Glass Co. in Clarksburg, W.Va., dominated that branch of the glass industry. Today, float glass, perfected by Sir Alastair Pilkington in 1959, has replaced sheet glass and is no longer made in the United States.

The bottle blowing machine also cut down on child labor because the bottle industry had previously depended on "mold boys" to open and close molds as well as boys to work as blow-pipe cleaners, among other jobs. By 1890, the number of children in glass factories had begun to dwindle — from 30 percent of the labor force to 20 percent — and by the end of the century, there were laws against child labor.

Technology, War, and Unions

Factory production ebbed and flowed with the push and pull of economic forces. For instance, domestic spending that had been deferred during World War I and increasing interest from abroad sparked heavy demand. But by the last half of 1920, consumer purchases slacked off and that caused inventories to build. Management enlisted the support of labor to help ease the pain. In the July 11, 1921, edition of *China, Glass, and Lamps*, a trade magazine, an article reported that the president of the American Flint Glass Workers Union urged members to "adjust the situation with the manufacturers in the best way possible ... American manufacturers have not yet reached that stage where they can keep on producing without letup when they have no orders for their goods." But by 1922, production shifted as imports outpaced exports. In another example of the industry's ups and downs, Prohibition slashed demand for barware and glass bottles until it was repealed in 1933.

This was reflected in employment, which fell to 55,000 in 1921 from 77,520, before it stabilized at about 67,000 between 1925 and 1929. In West Virginia, employment grew to 13,144 by 1929, but during the Depression fell to 8,759, with annual earnings declining by more than one-third from 1929 to 1932, according to Fones-Wolf. The industry rebounded by 1937, and a 1938 survey listed 62 glass plants in West Virginia, second only to Pennsylvania.

The state, however, had attracted the less valuable



Glass blowers at Seneca Glass Co. in Morgantown, W.Va., are shown working with a bubble of hot glass in the factory's massive blowing room, with 14 clay ovens.

branches of the industry. Even though 22 percent of the nation's glass plants were in West Virginia, it had only 15.3 percent of its workers and produced 13.8 percent total value, Fones-Wolf's research shows. Almost half, 45 percent, of the state's glass workers produced tableware, and that represented only 28 percent of the annual product value, while bottles and containers represented 37 percent of product value and employed 25 percent of the state's workers.

The decline had been foreshadowed even in the 1920s: That's when investment in manufacturing stopped growing. "The industry's share of manufacturing capital invested fell from 5.1 percent in 1909 to 2.6 percent by 1948, despite the enormous advances in mechanization," writes Fones-Wolf in *Glass Towns*.

Immigrants, Unions, and Tariffs

Early glass craftsmen like William John Blenko were immigrants, connected through family and professional contacts to worldwide glass production. Even in the 1880s and 1890s glass worker newspapers featured articles on the industry, not only from Europe and England but also from faraway Egypt and Russia, Fones-Wolf says in an interview. The hot glass industry furloughed every summer because of the heat, and immigrants returned home for family visits.

He cites an article from a glass industry newsletter about Belgian glass workers in West Virginia. Original plans had called for them to take guild positions in 1905 in Russia, but they immigrated to West Virginia instead because of timing — the Russian Revolution, which resulted in a series of industrial strikes. And Fairmont, W.Va., was home to several cooperative glass-making ventures, initiated by Belgian and French glass craftsmen.

As glass shops reshaped in size, location, and work force composition, attempts to unionize had culminated in the organization of the American Flint Glass Workers Union in 1878. Fones-Wolf notes that the "flints" went on strike in 1879, 1883, and 1888, for higher wages. Materials costs

decreased in all three parts of the industry: sheet, tableware, and bottles — while labor costs rose. In part, that's because glass required highly developed craft skills, such as blowing, until the first part of the 20th century.

The union and glass employers also were aided by tariffs first levied in 1789 to protect domestic industries. For example, between 1860 and 1890, heavy tariffs helped the industry gain market share, but supply began to exceed demand and led to plant closings and layoffs. In 1894, lower tariffs increased imports. By 1939, glass ranked 38th of 351 manufacturing groups surveyed by the Census Bureau, with 70,000 people employed in 229 companies nationwide.

Relations between labor and glass management were tight over the union's early years in part because the industry was composed mostly of descendants of the pre-industrial glass houses. They were from craft families and artisans themselves before becoming foremen and glass house managers. Labor and management sometimes worked together to support favorable legislation to benefit the industry.

Historians have debated the effects of tariffs on technological change in the glass-making industry. Scoville has suggested that high tariffs in part may have slowed innovation by cutting foreign competition in the 19th century. But historian Dennis Zembala, who has written about specialization in the industry, notes that press molds were invented in 1827, and innovations in furnace design came in the 1860s, among smaller developments. It was the bottle-making machine, invented in 1903, that revolutionized glass manufacturing and ultimately curtailed employment.

For example, Depression glass is simply machine glass made during the Depression. "It helped and hurt the industry," says Tom Felt, a collector who heads the West Virginia Museum of American Glass in Weston. "It allowed production, but then handmade glass became high end glass, and in the long run, it was too expensive to buy. The big costs are fuel and labor."

Union membership dwindled, hurt by industry mechanization as well as the chilling effect of crackdowns during coal miners' strikes in the teens and 1920s. The American Flint Glass Workers merged with the United Steel Workers in 2003, and their records are housed at the glass museum.

Bottles, Sheets, and Strands

Nationwide, the glass industry employs some 100,500 people and makes \$23 billion worth of product, according to the 2005 Annual Survey of Manufactures by the U.S. Census Bureau. That number declined from \$27.7 billion in 2001. The industry suffers from escalating energy costs and competition from low-cost labor markets.

Very little glass is manufactured in West Virginia anymore, and the West Virginia Museum of American Glass is working to chronicle and display the history of the once-thriving industry.

"The factory was the best-paying job," says Marcia Radcliff, a Weston woman who worked for 20 years at Louie Glass Co., one of at least three glass houses in the town, now

all closed. About eight firms remain in West Virginia, including firms like Blenko that manufacture glass by hand. Marble King in Paden City, W.Va., makes decorative, industrial, and play marbles. Masterpiece Crystal manufactures stemware in Jane Lew, W.Va. One of the most famous is the Fenton Art Glass Co. in Williamstown, W.Va., which sells via special order through its online catalog. And countless individual studio glass artists ply the

trade in shops throughout the state.

But for a generation, glass manufacturing influenced the culture and economy of West Virginia towns and created a flourishing middle class. The industry might have diversified the state's economy but did not, Fones-Wolf writes in *Glass Towns*: "It was, unfortunately, never enough to completely remake the region into an area that had a balanced and self-sustaining development." **RF**

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amenity for people to have who are interested in that sort of thing."

Minor league sports don't put cities on the map or make outsiders think of them as "major league cities." They're intensely local and don't produce the public-good benefits that major league sports do, Johnson says. He's worked with economists on similar research about the National Hockey League's Pittsburgh Penguins and the National Football League's Jacksonville Jaguars. But some subsidy could be justified for major league venues, he says. "The willingness to pay is always much much lower than the cost of a stadium."

Appalachian Power Park in Charleston, W.Va., hasn't delivered nearby economic development to the city. But the ballpark, which houses the South Atlantic League's West Virginia Power, has still benefited the community, City Manager David Molgaard says. "The overriding benefits, at least to this point, have been intangible," he notes. "It's just

really become a gathering spot and the place to be in Charleston."

Events other than Power games have come to Charleston and are planned there because of the stadium. It's hosted the finals for the World's Strongest Man competition, boxing matches, community events like Oktoberfest celebrations, and more.

Appalachian Power Park also houses one of Minor League Baseball's colorful fans, the "toast man." He's Rod Blackstone, the assistant to the mayor. Blackstone is mentioned on multiple Web sites that offer reviews of ballparks. During Power games, Blackstone runs a toaster in the stands. When an opposing batter strikes out, he throws toast into the crowd to remind the player that he is, well, toast.

"He's part of the local flavor for sure," Molgaard says. "I tease him that we built the whole park around him and his toaster." **RF**

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